

# Notice of Allowability

Application No.

10/532,272

Examiner

Russell Frejd

Applicant(s)

MAHE ET AL.

Art Unit

2128

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment received 1 December 2006.
2. ☒ The allowed claim(s) is/are 21-39.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

*Russell Frejd*  
**RUSSELL FREJD**  
**PRIMARY EXAMINER**

In re Application of: Mahe et al.

***Allowance of Application # 10/532,272***

1. The following communication is in response to applicant's amendment received 1-December-2006. Claims 1-20 were cancelled by the amendment, and new claims 21-41 were presented for examination. Claims 40 and 41 are cancelled by the following examiner's amendment. Claims 21-39 are pending in the application.

***Examiner's Amendment***

2. An Examiner's Amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 C.F.R. 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the Issue Fee. Authorization for this Examiner's Amendment was given by Kevin Godlewski (Reg. No. 47,598) and Brad Meier (Reg. No. 44,236) on 14-March-2007, and on 19-March-2007.

**2.1 In the Claims:**

claim 21	line 5	Change "pellets the" to --pellets, the--.
	line 9	Delete "and".
	line 13	Change "cladding." to --cladding; and--.
	line 14	Add --operating the reactor using the limit value, such that failure of the cladding does not occur.--
claim 37	line 6	Change "at least the fuel rod" to --at least a fuel rod--.

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|----------|------------|--|
|          | line 7     | Delete "and".  |
|          | line 8     | Change "the value of the first" to --the value of a first--.   |
|          | line 11    | Change "cladding." to --cladding; and--.   |
| claim 37 | line 12    | Add --an arrangement to operate the reactor using<br>the limit value, such that failure of the cladding does not occur.--  |
| claim 38 | line 6     | Delete "and".  |
|          | line 9     | Change "cladding is stored." to --cladding, and operating the<br>reactor using the limit value, such that failure of the cladding does<br>not occur, is stored.--  |
| claim 39 | lines 1-12 | Delete lines 1-12 in their entirety, and Add<br><br>--A computer-readable medium encoded with executable instructions for<br>establishing at least a limit value for at least a first operational parameter of a<br>nuclear reactor having a core, in which fuel assemblies are loaded, the fuel<br>assemblies having fuel rods each comprising pellets of nuclear fuel and a<br>cladding which surrounds the pellets, the encoded instructions executable by a<br>computer to:<br><br>simulate at least a transient operational occurrence of the nuclear reactor;<br><br>calculate a value reached by a physical quantity during the transient<br>operational occurrence in at least one of the fuel rod cladding;<br><br>establish as the limit value, the value of the first operational parameter<br>when the value calculated for the physical quantity corresponds to a value for the |

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physical quantity which characterizes a failure of the cladding; and  
operate the reactor using the limit value, such that failure of the cladding  
does not occur.--

Cancel claims 40 and 41.

### ***Reasons for Allowance***

3. The following is an Examiner's Statement of Reasons for the indication of allowable subject matter.

3.1 The instant application is directed to a non-obvious improvement over the invention described in USP 5,912,933, issued to Shaug et al., which teaches a method for determining an operating limit minimum critical power ratio in order to ensure that operation of the nuclear core is maintained in a nucleate boiling field instead of the transition boiling or flux boiling fields, which results in the realization of greater operating margins for the core, and more efficient and cost effective core operation and/or configurations.

3.2 The improvement of the present invention comprises, in various embodiments, a method for establishing a limit value for an operational parameter of a nuclear reactor having a core, the core being loaded with fuel assemblies each having fuel rods comprised of pellets of nuclear fuel surrounded by a cladding, wherein a limit value which corresponds to a failure of the cladding is determined based on simulating a transient operational occurrence of the nuclear reactor, wherein the limit value is used to operate the reactor in a manner to prevent the failure

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of the cladding. This patentable distinction is included in each of the independent claims, nos. 21, 37 and 39.

**3.3** The art of record, either individually or in combination, fails to teach, suggest, or render obvious the useful, concrete and tangible method for establishing a limit value for an operational parameter of a nuclear reactor having a core, having the corresponding structure which is disclosed in the specification and equivalents thereof at least at page 6, line 1 through page 22, line 14, and Figures 1-11. In view of the foregoing, the claims of the present application are found to be patentable over the prior art.

### ***Response Guidelines***

**4.** Any comments considered necessary by applicant **MUST** be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably accompany the Issue Fee. Such submissions should clearly be labeled "Comments on Statement of Reasons for Allowance".

**4.1 Any response to the Examiner in regard to this allowance should be**

**directed to:** Russell Frejd, telephone number (571) 272-3779, Monday-Friday from 0530 to 1400 ET, **or** the examiner's supervisor, Kamini Shah, telephone number (571) 272-2279. Inquires of a general nature or relating to the status of this application should be directed to the TC2100 Group Receptionist (571) 272-2100.

**mailed to:** Commissioner of Patents and Trademarks  
P.O. Box 1450, Alexandria, VA 22313-1450

**or faxed to:** (571) 273-8300

*Hand-delivered responses should be brought to the Customer Service Window, Randolph Building, 401 Dulany Street, Alexandria, VA, 22314.*

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Date: 16-March-2007

RUSSELL FREJD

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